

REMARKS

This Amendment is in response to the Office Action mailed December 21, 2007. The Examiner set a shortened statutory period for reply of three (3) months, making the present Amendment due by March 21, 2008. Accompanying this amendment is a Petition for a two-month extension of time and appropriate fee, making this amendment due on May 21, 2008.

The Examiner issued the subject Office Action in response to Applicant's Appeal Brief filed on March 30, 2007. Applicant understands that the subject Office Action was issued by the Examiner under M.P.E.P. § 1207.04 entitled "Reopening of Prosecution after Appeal."

Applicant has elected under that section to file the present reply under 37 C.F.R. § 1.111.

Applicant notes that appeals fees paid for the Notice of Appeal and Appeal Brief are applicable to a later appeal in this application.

In the present paper, claim 8 is amended and claims 21-23 are added. Claims 1-7 were withdrawn from consideration and claims 10, 11 and 16 were canceled in prior papers. Claims 8, 9, 12-15 and 17-23 are now presented for consideration by the Examiner in view of the following remarks:

Claim Rejections

The present invention is directed to a method for preparing a coated substrate. Atomic layer deposition is used to form a diffusion barrier for oxygen and water vapor on polymer substrates.

Exemplary independent claim 8 in the present case is directed to a method for preparing a coated substrate, including providing an atomic layer deposition arrangement comprising an evacuable chamber, and at least two atomic layer deposition sources within the chamber, wherein each atomic layer deposition source is isolated from the remainder of the chamber, conveying a flexible polymer film substrate past each atomic layer deposition source in succession, and exposing the substrate to each atomic layer deposition source as substrate is conveyed past.

In exemplary dependent claim 17, the step of conveying a substrate past each atomic layer deposition source further comprises providing a rotatable substrate source drum having substrate film wrapped there around, and providing a rotatable collection drum, rotating the

substrate source drum and conveying the substrate film into the chamber, and rotating the collection drum and receiving substrate film exiting the chamber.

In the Office Action, the Examiner has rejected claims 8, 12-13, 15 and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2002/0043216 to Hwang et al. (“Hwang”) in view of U.S. Patent Publication No. 2004/0194691 to George et al. (“George”), has rejected claim 14 under 35 U.S.C. § 103(a) as unpatentable over Hwang in view of George and further in view of U.S. Patent Publication No. 2003/0207032 to Ahn et al. (“Ahn”), and has rejected claims 9 and 17 under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 4,058,430 to Suntola et al. (“Suntola”) in view of George and further in view of U.S. Patent No. 5,300,189 to Kokaku et al. (“Kokaku”).

Claims 8, 9, 12-15 and 17-20

Claim 8 has been amended to require that the conveyed polymer film substrate be a “continuous, flexible” polymer film substrate. Applicant has added that limitation in response to the Examiner’s implicit suggestion to positively set forth the type of substrate used in the claimed embodiment (see Official Action of 12/21/08 at 9, lines 1-4). Applicant wishes to thank the Examiner for reopening prosecution after appeal, and submits that adoption of the suggested claim language should obviate the need to proceed with the additional papers necessitated by the appeal, including the Examiner’s answer, Reply Brief, etc.

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. M.P.E.P. § 2143.03 (citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Applicant asserts that a continuous, flexible polymer substrate is neither taught nor suggested by either of the references combined by the Examiner in rejecting claim 8, and is therefore not obvious.

The Huang publication discloses the fabrication of semiconductor devices, and clearly illustrates the processing of discrete semiconductor wafer substrates (Hwang at [0041]; FIG. 5). Those discrete disk-shaped substrates are not continuous, as required by claim 8. Furthermore, semiconductor substrates are typically rigid substrates, and Huang nowhere suggests the use of a flexible substrate as required by claim 8.

George mentions, at most, the use of polymer films and sheets as substrates. George provides no more detail on those exemplary substrates, and does not teach or suggest a flexible substrate or a continuous substrate (George at [0016], [0054]-[0055]).

Applicant therefore submits that the issues raised by the Examiner in the Response to Arguments section of the Office Action have been addressed. Specifically, Applicant asserts that claim 8 now positively sets forth a particular type of substrate using appropriate language in the claim, as suggested. The amended claim is not to be interpreted broadly to include substantially different types of substrates.

For those reasons, Applicant therefore submits that claim 8 is patentable over the combination made by the Examiner, and that claims 9, 12-15 and 17-20, which depend from claim 8 and incorporate its limitations, are patentable for at least the same reasons.

Claim 17

Claim 17 requires the following elements:

rotating the substrate source drum and conveying the substrate film *into* the chamber, and

rotating the collection drum and receiving substrate film *exiting* the chamber.

(emphasis added). That claimed configuration is described in the present specification:

... Substrate 14 is unwound from a supply roll 16 located in winding chamber 18. The substrate 14 is continuously fed *into through and out of process chamber 10*, routed over rotating temperature controlled processing drum 20 into processing chamber 10, and rewound on rewind drum 22 located in the winding chamber. ...

(present specification at page 4, line 20 - page 5, line 3 (emphasis added)).

Applicant asserts that none of the three references combined by the Examiner in rejecting claim 17 render obvious a substrate conveyed into and exiting an evacuable chamber. The Examiner admits that neither Suntola nor George teaches those limitations (Office Action of 12/21/08 at 6, lines 7-11). The Examiner alleges, however, that those limitations are taught by Kokaku. Applicant respectfully disagrees.

Kokaku clearly discloses a forwarding roll 7 and a rewinding roll 9 that are within the vacuum chamber 1 (Kokaku, FIGS. 1, 3, 4, 7; col. 3, lines 18-25). The entire path of the film 6 of Kokaku is within the vacuum chamber 1. Kokaku therefore does not disclose conveying the

substrate film *into* the chamber, as required by claim 17. Kokaku furthermore does not disclose a substrate film *exiting* the chamber, as further required by claim 17.

Applicant therefore asserts that claim 17 is patentable over the references cited by the Examiner.

New Claims 21 - 23

New independent claim 21 contains limitations similar to those of claim 17, but the substrate is not limited to a “continuous, flexible” polymer film. For the same reasons stated above with reference to claim 17, the combination cited by the Examiner does not teach or suggest a substrate conveyed into and exiting an evacuable chamber. Applicant therefore asserts that new independent claim 21, together with dependent claims 22 and 23, are patentable over the art cited in the Office Action for at least that reason.

New dependent claim 22 further requires that the substrate source drum and the collection drum be in a winding chamber. No such chamber is taught or suggested by the cited art. Kokaku teaches the complete film forwarding mechanism 7-10 within the vacuum chamber 1 (Kokaku at col. 3, lines 18-22). Applicant therefore further asserts that new claim 22 is patentable for that additional reason.

New dependent claim 23 further requires that the substrate film be conveyed into the evacuable chamber and exit the evacuable chamber through openings that are minimized to minimize fluid communication between the evacuable chamber and the winding chamber. No such arrangement is disclosed by the cited art. Applicant therefore further asserts that new claim 23 is patentable over the cited art for that additional reason.

Conclusion

Applicant therefore asserts that pending claims 8, 9, 12-15 and 17-23 are in condition for allowance, and earnestly requests that the Examiner issue a Notice of Allowance.

Should the Examiner have any questions regarding the present case, the Examiner should not hesitate in contacting the undersigned at the number provided below.

Respectfully submitted,

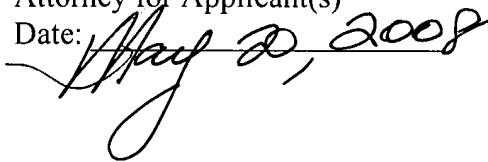


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